REMARKS

Submitted with this amendment is a petition to extend the time for responding to the Official Action from December 3, 2004 to January 3, 2005.

A new Fig. 5 is submitted herewith for the purpose of replacing the informal drawing submitted with the application. New Fig. 5 does not introduce any new matter and, therefore, entry of this new drawing in the application is respectfully solicited.

Claims 1-9, 14, and 16-28 are now in the application. Claims 1-3 and 17 have been allowed; claims 8 and 21 have been objected to as dependent from a rejected base claim that would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Claims 4-7, 9, 14, 16, and 18-20 stand rejected as unpatentable over the prior art.

Claim 10 has been objected to because it did not appear to specify which signals are produced non-sequentially. Claim 10 has been modified by this amendment to eliminate that indefiniteness. Therefore, it is believed the objection to the form of claim 10 should be withdrawn.

Applicants respectfully request reconsideration of the rejection of claim 14 under 35 USC 102(e) as being anticipated by Takahashi et al. Published Application No. US 2002-0071044 A1. Claim 14 has been amended to require that the circuit means process and utilize the video signals to provide a flicker-free video display of the selected optical image according to the first or second exposure levels only. It is obvious that Takahashi et al. do not teach or disclose the apparatus defined by claim 14 as presently amended. Therefore, Applicants respectfully request withdrawal of the rejection of claim 14 under 35 USC 102(e).

Applicants further request further reconsideration of the rejection of claims 4-7, 18 and 19 under 35 USC 103(a) as being unpatentable over Takahashi et al. in view of Haga (JP 03179889 A). Claims 4-7, 18 and 19 have been amended. Applicants respectfully submit that claims 4-7, 18 and

19 are neither disclosed nor rendered obvious by Takahashi et al. and Haga for the reasons hereinafter set forth.

Takahashi et al. are concerned with moving pictures and disclose an image sensing device that is directed to the overcoming the problem of images with excessively high or low luminance. Takahashi et al. achieve their objective by combining images of different exposures obtained from the same subject to form a single picture. The concept of combining images of different exposures to compose a single picture of acceptable exposure was old before the invention of Takahashi et al. Consequently the Takahashi et al. invention is directed to a specific manner of controlling exposure and focusing. Takahashi et al. do not teach or suggest Applicant's concept of a video method and apparatus for capturing and displaying optical images characterized by the following combination: (1) operating a video sensor to capture optical images whereby the video sensor produces an output video signal comprising a continuous sequence of video fields or frames representing the captures images, with the sequence comprising at least a series of first video fields or frames each representing a first exposure value and a series of second video fields or frames each representing a second exposure value, and (2) deriving from the output video signal a modified video signal consisting of only the series of first video fields or frames or only the series of second video fields or frames, with that modified video signal then being used to generate a display of the captured optical images as represented by said first or said second video fields or frames.

The deficiency of Takahashi et al. is not overcome by the Haga. Haga is concerned with an entirely different problem than Takahashi et al. Haga's invention is directed to a video system in which a video frame is produced by first and second interlaced fields and is concerned solely with eliminating the image blur in a static image. It eliminates blur by storing pixel data of video signals of a first video field in one memory unit and storing pixel data of the second video field in a second memory unit, and then employing a

motion detector to detect the existence of image blur by a threshold processing of a differential value between the pixel data stored in the first memory unit and the pixel data stored in the second memory unit. Haga then synthesizes a video image from the pixel data stored in both memory units if there is no blur. However, if a blur is detected, the system then utilizes the pixel data stored in either the first or the second field memory unit twice to synthesize an image display.

There is no teaching or suggestion in either Takahashi et al. or Haga of generating a modified video signal comprising a continuous sequence of first fields or frames representing a first exposure level or a continuous sequence of second fields or frames representing a second exposure level, and applying that modified video signal to a display means so that the captured optical image is displayed according to the exposure level of the video information contained in the modified video signal. Although Haga has two different memory units 11 and 12 for storing respectively first and second received fields from an imaging system output, with those memory units then providing a readout of those separate fields, Haga does not teach or suggest the concept of generating a display of captured images only from a series of first video field or frames data or only from a series of second video fields or frames data. Instead Haga provides a composite static image of the data from only one video frame, with that frame comprising two successive interlaced video fields if no blur exists or a repetition of a single field in the case a blur exists. Since, Haga is concerned only with producing a static image from a dynamic video signal, it provides no teaching or suggestion as to whether or how to modify the apparatus or method of Takahashi et al. in order to achieve Applicants' invention.

For the foregoing reasons, Applicants respectfully submit that claims 4-7, 18 and 19 are patentable over Takahashi et al. taken alone or together with Haga.

Applicants further request reconsideration of the rejection of claim 9 under 35 USC 103(a) as unpatentable over Konishi et al. in view of Haga for the following reasons.

Konishi et al disclose several different embodiments relating to still or moving video cameras. Fig. 5 of Konishi et al. illustrates a still video camera that is designed to produce a composite image with a wide dynamic range. As described in columns 17 and 18 of Konishi et al., the diaphragm 12 and the shutter 13 are controlled so as to form successive images with different amount of exposure. The video signal output from the CCD 14 is converted into digital image data and stored in first and second frame memory units 21 and 22. The pixel data stored in memory units 21 and 22 is used to produce a composite image. This is accomplished by use of a CPU 20 which (a) compares image data for each pixel stored in one frame memory with a predetermined high threshold luminance value, and (b) compares the image data for each pixel stored in frame memory unit 22 in relation to a second low threshold luminance value, and using a multiplexer selectively outputs pixel data from frame memories 21 and 22 in accordance with their luminance values to produce an inlaid composite image obtained by replacing image data representing a saturated (relatively bright) area in an image obtained under conditions of a very large exposure with image data representing a corresponding area in an image obtained under the conditions of a small amount of exposure. The image data outputted from the multiplexor 24 is then converted into an analog video signal which is then applied to a display device to generate an inlaid composite image display.

Clearly the Fig. 5 embodiment of Konishi et al. has no relation to the Haga video system. Moreover, there is no suggestion in either Konishi et al. or Haga of modifying Konishi et al. with component elements of Haga in order to produce a system corresponding to the invention defined by claims 9-10, 12 and 13.

Fig. 10 of Konishi et al. shows an embodiment in which image inlaying synthesis processing is performed in an analog video signal in real time. The system of Fig. 10 can be adapted to function as a movie video camera or a still video camera. However, the system shown in Fig. 10 requires two different video sensors in the form of CCDs 44 and 45 with a beam splitter 43 being used to vary the amount of light incident on the CCDs 44 and 45, with the CCD 45 receiving $1/6^{th}$ the amount of incident light that is received by the CCD 44. Hence, the output video signals from the CCDs 44 and 45 represent images of different exposure values. Those signals are selected by the multiplexor 56 to provide an output video signal which is used to synthesize an image display using data from both CCDs. Clearly, the camera system shown in Fig. 10 of Konishi et al. does not anticipate or suggest Applicants' invention. Furthermore, since it relates to synthesizing an image using selected data from two different exposures (as contrasted with Applicants' using two video fields of the same exposure to form an image), it would not be obvious to look to Haga for assistance in making the changes required to attain Applicant's apparatus and method.

Fig. 16 of Konishi et al. relates to a movie/video camera which usually is operated in a moving mode. As explained in column 27, lines 1-5, the exposure time of the CDD 83 is controlled to be kept constant (for example 1/60 seconds). When the user of the camera desires to reserve an image of a subject as a still image, the user depresses a shutter release button 89, thereby generating a shutter release signal which causes the CCD driving circuit 88 to adjust the timing so that the exposure time becomes ¼ of the exposure time in a moving mode in a field subsequent to a field where exposure is made at the time when the shutter release signal is fed. The video signals of the two fields are utilized to synthesize a single frame image.

Konishi et al. also show several other embodiments. However, those other embodiments are no more pertinent than the embodiments of Figs. 5, 10 and 16 described hereinabove.

For the foregoing reasons, Applicants respectfully submit that Konishi et al. do not teach or suggest Applicants' invention and it would not be obvious to a person skilled in the art to attempt to modify Konishi et al. in accordance with the teachings of Haga.

Applicants further request reconsideration over the rejection of claim 16 under 35 USC 103(a) as unpatentable over Takahashi et al. in view of Konishi et al. The deficiencies of Takahashi et al. and Konishi et al. have been set forth above. Applicants submit that both Takahashi et al. and Konishi et al. do not teach of suggest Applicants scheme of generating a sequence of video fields or frames of an image wherein the fields of frames represent different exposure levels, and then selecting fields or frames of one particular exposure level for use in producing a display of the captured image. The deficiencies of Takahashi et al. are not made up by the teachings of Konishi et al., and there is no teaching or suggestion in either reference that would make it obvious to modify Takahashi et al. with teachings of Konishi et al. so as to produce a system as defined by claim 16.

Applicants further request reconsideration of claim 20 which has been rejected as unpatentable over Takahashi et al. in view of Haga and Nakanishi et al. The deficiencies of Takahashi et al. and Haga have been described above. Nakanishi et al. is concerned with providing a solution to the problem of preserving image information when a video signal comprises a greater number of scanning lines than the number of horizontal scanning display lines of the intended display device. The patentees avoid loss of upper and lower portions of the video image represented by a video signal by thinning the video signal at a rate of one out of every predetermined number of horizontal scanning lines. The fact that Nakanishi et al. show in Fig. 11 that data can be read out alternately from field memories 3 and 4 to generate a display is interesting as a technique, but there is nothing in any of the references applied against claim 20 that suggests or makes it obvious to look to Nakanishi et al. et al. for features that are lacking from Takahashi et al. and Haga viewed

collectively. The foregoing is particularly true since Takahashi et al. are concerned with making a composite image of suitable exposure value whereas Nakanishi et al. are not concerned with exposure values but instead with providing an improved method of modifying a video image represented by n horizontal scanning lines so that it can be displayed by a display device limited to less than n horizontal scanning liens without loss of upper and lower portions of the video image. Therefore, Applicants believe that claim 20 defines a novel and patentable invention and that it should be allowed.

Claims 8 and 21 are believed to be patentable since they depend from claims that have been amended to distinguish patentably from the prior art and also because they recite novel limitations.

The new claims 22-28 submitted with this amendment are patterned after the other claims in the application, and some of those new claims depend from existing claims. These new claims do not add any new matter but instead are designed to adequately cover significant features of Applicants' invention. These claims are believed to be patentable for the same reasons as the other original claims (amended and Unamended) that remain in the application.

It is believed that the foregoing constitutes a complete response to the Official Action and does not raise any new issues. Therefore, prompt and favorable reconsideration of this application is solicited.

Respectfully submitted,

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AMENDMENTS TO THE DRAWINGS

Please substitute the enclosed new drawing of Fig. 5 for the original drawing of Fig. 5 submitted with the application.